What is claimed is:

1. A method of determining alignment between the wheels of a vehicle using a position determination system, comprising the steps of:

indicating wheel positions on the vehicle with targets;

imaging the targets to obtain locations of the wheel positions; and

calculating a relationship between the front and rear wheels.

2. The method according to claim 1, further comprising the steps of:

calculating a front wheel track, the front wheel track being defined between the locations of the two front wheels; and

calculating a rear wheel track, the rear wheel track being defined between the locations of the two rear wheels.

3. The method according to claim 2, wherein the step of calculating the relationship between the front and rear wheels includes comparing an angle between the calculated front wheel track and the calculated rear track to a specified range for the angle between the calculated front wheel track and the calculated rear track.

4. The method according to claim 2, wherein the step of calculating the relationship between the front and rear wheels includes comparing the calculated front wheel track to a specified range for the front wheel track and comparing the calculated rear wheel track to a specified range for the rear wheel track.

5. The method according to claim 2, further comprising the steps of:

calculating a right wheel base, the right wheel base being defined as the distance of a line passing adjacent one of the right wheels and perpendicularly from the wheel track passing through the one of the right wheels to the wheel track passing through the other of the right wheels; and

calculating a left wheel base, the left wheel base being defined as the distance of a line passing adjacent one of the left wheels and perpendicularly from the wheel track passing through the one of the left wheels to the wheel track passing through the other of the left wheels.

6. The method according to claim 5, wherein the step of calculating the relationship between the front and rear wheels includes comparing the calculated right wheel base to a specified range for the right wheel base and comparing the calculated left wheel base to a specified range for the left wheel base.

7. The method according to claim 1, further comprising the steps of:

calculating a right wheel base, the right wheel base being defined between the locations of the two right wheels; and

calculating a left wheel base, the left wheel base being defined between the locations of the two left wheels.

8. The method according to claim 7, wherein the step of calculating the relationship between the front and rear wheels includes comparing the calculated right wheel base to a specified range for the right wheel base and comparing the calculated left wheel base to a specified range for the left wheel base.

9. The method according to claim 2, further comprising the steps of:

calculating a front center point of the front wheel track;

calculating a rear center point of the rear wheel track;

defining a line originating from the center point of one of the front and rear wheel tracks and perpendicular thereto and intersecting the other of the front and rear wheel tracks; and

calculating an offset distance from the intersection of the line with the other of the front and rear wheel tracks to the center point of the other of the front and wheel tracks.

10. The method according to claim 9, wherein the step of calculating the relationship between the front and rear wheels includes comparing the calculated offset distance to a specified range for offset distance.

11. The method according to claim 1, further comprising the steps of:

calculating a first diagonal, the first diagonal being defined between the locations of the right, front wheel and the left, rear wheel; and

calculating a second diagonal, the second diagonal being defined between the locations of left, front wheel and the right, rear wheel.

12. The method according to claim 11, wherein the step of calculating the relationship between the front and rear wheels includes calculating a difference between the first diagonal and the second diagonal and comparing the calculated difference between the first diagonal and the second diagonal to a specified range for difference between the first diagonal and the second diagonal.

13. The method according to claim 11, wherein the step of calculating the relationship between the front and rear wheels includes comparing the calculated first diagonal to a specified

range for the first diagonal and comparing the calculated second diagonal to a specified range for the second diagonal.

14. The method according to claim 11, further comprising the steps of:

calculating a first skew angle, the first skew angle being defined as the angle between the first diagonal and one of the wheel tracks; and

calculating a second skew angle, the second skew angle being defined as the angle between the second diagonal and the other of the wheel tracks.

15. The method according to claim 14, wherein the step of calculating the relationship between the front and rear wheels includes calculating a difference between the first skew angle and the second skew angle and comparing the calculated difference between the first skew angle and the second skew angle to a specified range for difference between the first skew angle and the second skew angle.

16. The method according to claim 14, wherein the step of calculating the relationship between the front and rear wheels includes comparing the calculated first skew angle to a specified range for the first skew angle and comparing the calculated second skew angle to a specified range for the second skew angle.

17. A computer-implemented position determination system for determining alignment between the wheels of a vehicle, comprising:

one or more targets for indicating wheels positions on the vehicle; and

a vision imaging system for imaging the targets to obtain locations of the wheel positions and for calculating a relationship between the front and rear wheels of the vehicle.

18. The system according to claim 17, wherein the vision imaging system calculates a front wheel track and a rear wheel track with the front wheel track being defined between the locations of the two front wheels and the rear wheel track being defined between the locations of the two rear wheels.

19. The system according to claim 18, the calculation of the relationship between the front and rear wheels includes comparing an angle between the calculated front wheel track and the calculated rear track to a specified range for the angle between the calculated front wheel track and the calculated rear track.

20. The system according to claim 17, the calculation of the relationship between the front and rear wheels includes comparing the calculated front wheel track to a specified range for the front wheel track and comparing the calculated rear wheel track to a specified range for the rear wheel track.

21. The system according to claim 18, wherein the vision imaging system calculates a right wheel base and a left wheel base with the right wheel base being defined as the distance of a line passing adjacent one of the right wheels and perpendicularly from the wheel track passing through the one of the right wheels to the wheel track passing through the other of the right wheels and the left wheel base being defined as the distance of a line passing adjacent one of the left wheels and perpendicularly from the wheel track passing through the one of the left wheels to the wheel track passing through the other of the left wheels.

22. The system according to claim 21, wherein the calculation of the relationship between the front and rear wheels includes comparing the calculated right wheel base to a specified range for the right wheel base and comparing the calculated left wheel base to a specified range for the left wheel base.

23. The system according to claim 17, wherein the vision imaging system calculates a right wheel base and a left wheel base with the right wheel base being defined between the locations of the two right wheels and the left wheel base being defined between the locations of the two left wheels.

24. The system according to claim 23, wherein the calculation of the relationship between the front and rear wheels includes comparing the calculated right wheel base to a specified range for the right wheel base and comparing the calculated left wheel base to a specified range for the left wheel base.

25. The system according to claim 18, wherein the vision imaging system:

calculates a front center point of the front wheel track and a rear center point of the rear wheel track;

defines a line originating from the center point of one of the front and rear wheel tracks and perpendicular thereto and intersecting the other of the front and rear wheel tracks; and

calculates an offset distance from the intersection of the line with the other of the front and rear wheel tracks to the center point of the other of the front and wheel tracks.

26. The system according to claim 25, wherein the calculation of the relationship between the front and rear wheels includes comparing the calculated offset distance to a specified range for offset distance.

27. The system according to claim 17, wherein the vision imaging system calculates a first diagonal and a second diagonal with the first diagonal being defined between the locations of the right, front wheel and the left, rear wheel and the second diagonal being defined between the locations of left, front wheel and the right, rear wheel.

28. The system according to claim 27, wherein the calculation of the relationship between the front and rear wheels includes calculating a difference between the first diagonal and the second diagonal and comparing the calculated difference between the first diagonal and the second diagonal to a specified range for difference between the first diagonal and the second diagonal.

29. The system according to claim 27, wherein the calculation of the relationship between the front and rear wheels includes comparing the calculated first diagonal to a specified range for the first diagonal and comparing the calculated second diagonal to a specified range for the second diagonal.

30. The system according to claim 27, wherein the vision imaging system calculates a first skew angle and a second skew angle with the first skew angle being defined as the angle between the first diagonal and one of the wheel tracks and the second skew angle being defined as the angle between the second diagonal and the other of the wheel tracks.

31. The system according to claim 30, wherein the calculation of the relationship between the front and rear wheels includes calculating a difference between the first skew angle and the second skew angle and comparing the calculated difference between the first skew angle and the second skew angle to a specified range for difference between the first skew angle and the second skew angle.

32. The system according to claim 30, wherein the calculation of the relationship between the front and rear wheels includes comparing the calculated first skew angle to a specified range for the first skew angle and comparing the calculated second skew angle to a specified range for the second skew angle.